Dr. Peterson
OSTP Conference Call: Tech's Work on Grand Challenges
Friday, Sept. 27, 2013

Key Points:

- At Georgia Tech, our goal is to prepare innovators and leaders. We incorporate grand challenges into undergraduate research and education programs across the curriculum.
- Work on Grand Challenges is integrated in Georgia Tech's 12 core research areas, and it is part of our 25-year strategic plan, Designing the Future.

Student Examples:

- **Grand Challenges program —** The living-learning community started in Fall 2012 in partnership with the College of Engineering. The freshmen concentrate on solving global issues related to food, water, energy, and healthcare. Projects have included
  - improving the irrigation infrastructure in the Sahel region of Burkina Faso
  - reducing transportation pollution by designing easily accessible battery charging stations for electric cars in Atlanta;
  - harnessing the energy loss from water pressure regulators; and
  - designing a system for waste-to-energy conversion on a household scale
- **Georgia Tech embeds industry funded innovation and competitions throughout its problem-based learning curriculum.**
  - We offer a growing number of opportunities for students to become engaged in innovation, including the InVenture Prize, Capstone Design Expos, Invention Studio, Ideas to Serve, the Convergence Challenge, and the Smart Grid Challenge, in partnership with GE.

Research Examples:

Robotics: Human-machine interaction, assistive technologies for the elderly, multiple autonomous vehicles, Robotics Roadmap, Henrik Christensen

Manufacturing

- We're helping to facilitate adoption of new practices in digital manufacturing spanning product design, manufacture, including 3D printing, and supply chains.

Materials Work

- In June, Georgia Tech announced the launch of its Institute for Materials, or IMat in conjunction with President Obama's Materials Genome Initiative. It is the newest of 9 Interdisciplinary Research Initiatives, and will accelerate materials discovery, development, and application.

Pediatric Technologies:

- Implants that grow with a child
- Equipment tailored to a child's needs
  - An example of student engagement: As a senior in BME, Petit Scholar Susan Hastings worked with a Georgia Tech ME Professor and Physician (David Ku) and a Children's Healthcare of Atlanta Cardiologist (Kevin Maher) to determine a solution for clogging in infant heart/lung bypass machines, or ECMO. Her work led to new insight in new nanomaterial coatings that can prevent clogging at the output of the Oxygenator.
- Nano-medicine therapies for cures of single defect diseases
- Proactive approaches for areas such as asthma and childhood obesity
- Health IT: Electronic patient records and analytics

Energy: Scalable smart grid technologies using our campus and region as a living laboratory

Closing comments:

- Much of our work is done within a regional innovation ecosystem with multiple university, NGO, and industry partners.
- We remain committed to working with OSTP, including providing subject matter experts in numerous areas, as well as working with other universities, hospitals,

government, business and industry to drive American innovation, create jobs and solve grand challenges.